

Tenneco Minerals
A Tenneco Company

P.O. Box 2650
St. George, Utah 84770

DOGM
MINERALS PROGRAM
FILE COPY



#1 of 2

April 23, 1991

Lowell, P. Braxton
Associate Director, Mining
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180

RECEIVED

MAY 01 1991

DIVISION OF
OIL GAS & MINING

Dear Mr. Braxton:

RE: Response to DOGM review comments on Tenneco's Goldstrike Revised Notice of Intention, M/053/005

Tenneco has completed responses to the DOGM's January 2, 1991 review of the October 5, 1990 revised Notice of Intention. With this letter, we are submitting updated versions of the revised NOI to reflect your review comments. The changes to the text are underlined and contain footnotes denoting the revised date in the lower right-hand corner of each revised page. Only the revised pages and drawings are being re-submitted. In order to assist the DOGM review team we have prepared an itemized response to the comments as they were requested. The following responses either refer to the pages of the updated NOI where comments are addressed or address them directly.

In addition, we have prepared responses to the review comments presented by the Utah Division of Wildlife Resources in their January 30, 1991 letter to the DOGM. Our responses are discussed at the end of this letter.

R613-004-105.3 Maps, Drawings and Photographs

Drawings Nos. GS-006 and GS-009, 1990 and 1992 Hydrology maps have been revised to show general direction of surface runoff flow and culvert sizes and locations.

Drawings Nos. GS-005 and GS-008, 1990 and 1992 Project Development maps have been revised to reflect the current and proposed configuration of the solution ponds. In addition, labels of individual facilities have been added.

The West Hassayampa and Peace Mine Pits are shown on Drawing GS-007, 1991 Project Development. These pits will be mined in 1991 as stated in Table 4.1-1. The pits are very small and will be mined and backfilled quickly with overburden from other pits. They will be reclaimed according to the same treatments specified for the remainder of the project.

R613-004-106 Operation Plan

The 24-inch spillway pipes between the ponds are already in place. This has been clarified on page 24 of the revised NOI.

A tables with supporting hydraulic calculations for the culverts is found on page 32A of the revised NOI.

The maintenance plan/schedule for all the existing and proposed runoff and sediment control structures is found on page 34 of the revised NOI.

The issue of erosion along Ditch #1 is addressed on page 33 of the revised NOI. This ditch is not currently intended to remain after mining operations cease.

Tenneco plans to build the Quail Canyon Dam and the foundation for the Leach Pad # 2 Extension by placing the material in 10-foot lifts rather than end-dumping from the crest elevation. The proposed construction modifications are discussed on page 36 of the revised NOI. Tenneco is in the process of obtaining permits from the Bureau of Water Pollution Control (BWPC) for the construction and operation of the Leach Pad # 2 Extension. As part of this process, the BWPC's concerns regarding settlement and leak detection are being addressed by Tenneco in the form of modifications to designs for the leach pad foundation and liners.

A copy of the permit to construct the Quail Canyon Dam from the Utah Division of Water Rights has been forwarded to DOGM and have been made an appendix to the revised NOI.

Design calculations to support the 86-acre feet capacity of the reservoir behind Quail Canyon Dam are found on page 44 of the revised NOI.

R613-004-106(5) Operation Plan - Topsoil Salvage

Tenneco has revised the topsoil placement plan to address DOGM's comments. These revisions are discussed on pages 42, 51, and 51A of the revised NOI and are shown on Drawing No. GS-011. Tenneco will place 6 inches of topsoil on reclaimed roads and flat areas of the minesite. Eight inches will be placed on slopes that have final grade of 2.5:1 or flatter. Slopes steeper than 2.5:1 will receive 6 inches of fill material and then 8 inches of topsoil. Topsoil stockpiles and roads to remain after mining will not be topsoiled. Based on this revised placement plan, Tenneco estimates that approximately 9,000 cy of fill

material and 183,000 cy of topsoil will be required. Tenneco will stockpile 193,000 cy of topsoil as previously identified and will stockpile 10,000 cy of fill material for use during reclamation. Because the BLM is unwilling to allow Tenneco to borrow topsoil from undisturbed areas, this material will come from suitable overburden salvaged during future mining operations.

R613-004-109 Impact Assessment

Safety berms or fences will be constructed around highwalls remaining in the Padre and Basin Pits. The specifications for the berms and fences are discussed on page 59 of the revised NOI. A typical cross section of the safety berm and locations of berms and fences are shown on Drawing No. GS-011. Although the berms will likely be constructed during operations, the cost has been included in the reclamation surety calculations on page 59 of the revised NOI.

A description of the highwall stability for the Padre Pit was included in Appendix E - Slope Stability Analysis in the original NOI and in the revised NOI. This Appendix has been updated to include a description of the highwall stability in the Basin Pit.

R613-004-110 Reclamation Plan

The Goldtown Pit will be completely backfilled with material from the Basin Pit as discussed on page 51 of the revised NOI. After backfilling the pit, it will be reclaimed according to the same treatments specified for the remainder of the project.

The sediment dam will be topsoiled and revegetated as discussed on page 51 of the revised NOI. These measures will provide for the long-term stability of this dam.

The concentrated evaporites and sediments remaining in the ponds upon dryness will be analyzed and disposed of as required according to the procedures discussed on page 49 of the revised NOI.

Tenneco believes the time frame proposed is the best estimate possible based on testing of materials to date. Should data become available after rinsing of Leach Pad # 1 commences, Tenneco will revise the time frame and surety as appropriate. The conditions of "drained" are defined on page 49 of the revised NOI.

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The topsoil stockpiles will be revegetated according to the same treatments specified for the remainder of the project.

On January 31, 1991, the BLM signed the Decision Record for the Revised Plan of Operations for the Tenneco Goldstrike Mine. On page 33 of this revised POO mention was made to the fact that the BLM will maintain a road through the mine site to connect to their Road No. 42529. In as much as the BLM approved the revised POO, Tenneco assumes this constitutes a written commitment by the BLM to maintain the road.

After the topsoil is placed it will be ripped to a depth of 6 inches. Because in some places topsoil depths will only be 6 inches, a 12 inch ripping depth is inappropriate.

The heap leaches will be topsoiled according to the revised topsoil plan mentioned above and on page 51A of the revised NOI.

R613-004-111 Reclamation Practices

The foundation slopes will be constructed or regraded to configurations that will allow reasonable access for mechanized equipment to place fill material and topsoil. The paragraph on page 52, Section 6.6, Topsoil Plan which states that topsoil will be dozed and allowed to fall down the slopes has been removed from the revised NOI. - qtd

Table 4.1-1 Mining Sequence (page 37) has been revised to reflect the updated plan for mining. The Peace Mine and Goldtown Pits will be totally backfilled upon final reclamation. ^{page 51A?}

The proposed mine plan has been developed based on the location of recoverable mineral deposits. The location of these deposits necessitates that mining proceed radially outward from the existing operation. This type of mining sequence allows for pits to be backfilled as they are mined out. The material for backfilling comes from overburden removed from the next pit to be mined. Thus the last pits to be mined are not backfilled because there is no material available. In the case of the Goldstrike project, the last pits to be mined (Padre and Basin) are the furthest from the centroid of the existing operation. It would not be possible to leave the Peace Mine Pit unbackfilled because it is located at the site of the Leach Pad # 2 Extension.

R613-004-111(6) Reclamation Practices - Slopes

Tenneco will reclaim the leach pad slopes to an overall outer slope of 2.5:1 prior to topsoiling and revegetating as discussed on page 50 of the revised NOI.

For slopes that will be steeper than 2.5:1 alternate slope stabilization techniques will be employed. These techniques include placing 8 inches of fill material on the slopes prior to the 6 inches of topsoil, and placing a layer of erosion netting. The details of these practices are discussed on pages 52 and 53 of the revised NOI.

Tenneco would prefer to regrade the neutralized leached ore material off the liners, where possible, to obtain final grades of 3:1 slopes. However, the BWPC is, at this time, unwilling to allow this. Tenneco will continue to pursue permission for this practice with the BWPC and will revise the reclamation plan section of the NOI should it become allowable.

Tenneco will apply supplemental slope stabilization techniques for all slopes steeper than 2.5:1 as discussed above and on pages 52 and 53 of the revised NOI.

R613-004-111(13) Reclamation Practices - Revegetation

Grasses and forbs will be planted on the tops and sideslopes of the impounding structures. Riparian species are not proposed for the potentially impounding areas because it is unlikely that water will exist often enough and for periods of time long enough to support their growth. The water that may collect in the bottoms of the pits is expected to infiltrate into the soils and waste rock very quickly. However, should water collect at the surface of the backfilled pits it should be adequate for wildlife consumption because there will not be any sulfide ore mined and therefore no potential for acid generation in the water.

R613-004-111 Variances

Tenneco will apply supplemental slope stabilization techniques for all slopes steeper than 2.5:1 as discussed above and on pages 52 and 53 of the revised NOI.

The slope on the southwest side of Hamburg Peak was reclaimed in August and October, 1990. A total of 6.32 acres was reclaimed using the following methods. First, a six inch layer of topsoil was spread/dumped on the top and slope. Then seed was broadcast and hand raked at the specified rate per acre (see attachment letter). Then the area was webbed with 5/8 inch plastic webbing. The webbing had a six inch cover overlap at the

seams and was stapled with six inch staples every six feet. Next, each acre was hydromulched with 100 gallons of marlous polymer, 2,500 pounds aero fiber blend (40 percent straw, 20 percent peat moss, and 40 percent aspen fiber), and 100 pounds 16-16-8 fertilizer. The hydromulch was applied in a slurry with a 3,300 gallon Finn Hydromulcher.

Tenneco has completed an investigation of the highwall stability in the Basin Pit. This investigation found adequate factors of safety along all major axes of the pit wall orientations and concluded that the designed 58 degree slope is safe overall. This investigation has been included in Appendix F of the revised NOI.

R613-004-113 Surety

Tenneco has revised its reclamation surety for the Goldstrike Project to \$1,200,000. On January 24, 1991, the Board of Oil, Gas and Mining granted its concurrence and approval of the amount and form of the revised surety.

Response to Division of Wildlife Resources Comments

On March 1, 1991 the DOGM responded to the DWR January 30, 1991 comments. In this letter, the DOGM mentioned that it would recommend that Tenneco incorporate three changes into their mining and reclamation plan. Tenneco has the following response to these proposed changes.

1. Tenneco has reviewed the species list provided by the DWR and commits to adding the following to our reclamation seed mix: Intermediate wheatgrass, Lewis Flax, and Gooseberryleaf and/or scarlet globemallow.
2. Tenneco believes that the climatic conditions at the Goldstrike Mine are such that seeding should occur after October first, as stated in the revised NOI on page 53.
3. Tenneco has committed to leave the perimeter fence in place until reclamation is completed and the surety bond is released. This was stated on page 50 of the revised NOI.

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If you have any questions regarding our revised NOI feel free to contact me or Elliott Lips at JBR Consultants Group.

Sincerely,

Ken A. Kluksdahl by [signature]

Ken A. Kluksdahl
Mine Manager

cc: D. Brannum/Tenneco
E. Lips/JBR



Norman H. Bangerter
Governor

Dee C. Hansen
Executive Director

Dianne R. Nielson, Ph.D.
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DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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801-538-5340

June 5, 1990

Mr. Jim Smith, Engineer
Tenneco Minerals
P. O. Box 2650
St. George, Utah 84770

Dear Mr. Smith:

Re: Seed Mix Recommendations, M/053/005, Washington County, Utah

Please find attached my recommendations for seed mixes to be used at your site for 1) the West Hamburg Pit and 2) topsoil stockpiles.

The seed mix I have recommended for the West Hamburg Pit can be applied this June. The seed should lie dormant throughout the hot months and germinate this fall or next spring. The seed mix, which I have recommended for the topsoil stockpiles, should be applied only in the early spring or late fall.

Please call if you have questions.

Sincerely,

Holland Shepherd
Reclamation Specialist

jb
Attachments
WMN/9

Seed Mix Recommendation
for
West Hamburg Pit Reclamation

Tenneco Minerals
Goldstrike Mine
M/053/005

Common Name	Scientific Name	*Lbs/ac
Tall Wheatgrass	Agropyron elongatum	10
Streambank Wheatgrass	Agropyron riparium	6
Indian Ricegrass	Oryzopsis hymenoides	5
Alfalfa	Medicago sativa var ranger	4
Fourwing Saltbush	Atriplex canescens	4
Cliff rose	Cowania stansbier rana	3
Serviceberry	Amelanchier utahensis	3
Total		35

*Broadcast seeding rate

WMNSeed/1